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10/578,180	09/28/2006	Djamschid Amirzadeh-Asl	DNAG-320	5207

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EXAMINER	
COHEN, STEFANIE J	

ART UNIT	PAPER NUMBER
1732	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

nyipdocket@fulbright.com

Office Action Summary	Application No.	Applicant(s)	
	10/578,180	AMIRZADEH-ASL ET AL.	
	Examiner	Art Unit	
	STEFANIE COHEN	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 November 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *49-56* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Election/Restrictions

Newly submitted claims 49-55 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

The claims are directed to distinct processes. Original claims are directed toward a plastic/ inorganic solid mixture which is introduced into a liquid melt while claims 49-53 are directed towards a titanium oxide/ inorganic solid mixture which is introduced into a hot liquid melt of hydrocarbon- containing plastic. Claims 49-53 require a different search in the area of injecting a titanium oxide/ inorganic solid mixture into a hot liquid melt of a hydrocarbon plastic.

Further, claims 54-55 are independent or distinct than claims 49-53 and the original claims. Claims 54-55 goes into further details of "mixing the particulate inorganic mixture with solid granules which have a surface such that the inorganic particles adhere onto the surface of the solid plastic granules to form a granulate plastic flux mixture". Claims 54-55 require an independent search of inorganic particles adhering to the surface of the solid plastic granules.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 49-55 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 32 teaches a limitation of "90% of the inorganic solid have particle sizes of .01 microns" while claim 33 teaches a limitation "90% of the inorganic solids have particle sizes of from .1 microns to 2 mm.

The size limitation of claim 33 is not within the size limitation of claim 32. Further applicant cannot broaden a range once it has been limited in a claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 31-33, 36-37, 40 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable by Trout et al (6372013).

Trout, abstract, teaches particulate carrier material for use with particulate passivated magnesium for injection into molten iron to desulfurize the iron, improve characteristics of the slag and increase iron yield.

The composition of the carrier material is 54-74% calcium oxide, 19-32% aluminum oxide, no more than 4% magnesium oxide, no more than 10% calcium fluoride, no more than 2.5% silicon dioxide, no more than 1.0% iron oxide, no more than 0.025% phosphorus pentoxide, no more than 0.025% titanium dioxide, no more than 0.5% manganese oxide, no more than 0.025% vanadium pentoxide, no more than 0.025% potassium oxide, no more than 0.05% sulfur and a combined loss on ignition and moisture content of no more than 1.5%.

Further, Trout, cols. 4 and 5, teaches although severe turbulence is not desired, a moderate amount of turbulence is beneficial to the process. Such can be provided, as is well known in the art, by adding up to about 2% of a hydrocarbon material such as rubber shavings, coal powder, or particulate plastic to the above described material flow. Such materials generate a stirring gas is which non-desirable oxygen is not present.

Trout, col. 5, teaches particle size of the carrier material (about 200 mesh) and the passivated magnesium (about 12-20 mesh) is an important characteristic of the material.

200 mesh is about .075 mm (75 microns).

It would have been obvious to one of ordinary skill in the art at the time of the invention to ensure 90% of the carrier material is about 200 mesh to obtain a uniform particle size for the hydrocarbon-plastic/inorganic mixture.

Regarding claims 32, Trout, col. 5, teaches particle size of the carrier material (about 200 mesh) and the passivated magnesium (about 12-20 mesh) is an important characteristic of the material.

200 mesh is about .075 mm (75 microns).

It would have been obvious to one of ordinary skill in the art at the time of the invention to decrease the particle size of the inorganic solid to ensure the solid is completely mixed with the hydrocarbon- plastic.

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to ensure 90% of the solids have a particle size of .01 microns to ensure a uniform mixture of the solids and hydrocarbon plastic.

Regarding claim 33, Trout, col. 5, teaches particle size of the carrier material (about 200 mesh) and the passivated magnesium (about 12-20 mesh) is an important characteristic of the material.

200 mesh is about .075 mm (75 microns).

It would have been obvious to one of ordinary skill in the art at the time of the invention to ensure 90% of the carrier material is about 200 mesh to obtain a uniform particle size for the hydrocarbon-plastic/inorganic mixture.

Regarding claims 36-37, Trout teaches the composition of the carrier material is 54-74% calcium oxide, 19-32% aluminum oxide, no more than 4% magnesium oxide, no more than 10% calcium fluoride, no more than 2.5% silicon dioxide, no more than 1.0% iron oxide, no more than 0.025% phosphorus pentoxide, no more than 0.025% titanium dioxide, no more than 0.5% manganese oxide, no more than 0.025% vanadium pentoxide, no more than 0.025% potassium oxide, no more than 0.05% sulfur and a combined loss on ignition and moisture content of no more than 1.5%.

Regarding claim 40, Trout teaches both the carrier material and the hydrocarbon material being in solid form.

Regarding claim 44, Trout, abstract, teaches particulate carrier material for use with particulate passivated magnesium for injection into molten iron to desulfurize the iron, improve characteristics of the slag and increase iron yield.

Claims 31-36, 40 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman et al (5972072) in view of Trout et al (6372013).

Kinsman, col. 3, teaches a desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating

composition and the balance lime plus impurities. The desulfurization composition is injected into molten iron from a blast furnace preferably in an amount of 4 to 20 pounds desulfurizer per ton of hot metal. The desulfurizing composition can be injected into the hot metal through a lance using a carrier gas or dumped into the hot metal as it is being poured into the ladle. At least for torpedo ladles, the desulfurization composition can be placed in the ladle before the hot metal is poured into it.

Although Kinsman teaches desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities, Kinsman does not teach the particle size of the inorganic particulates.

Trout, abstract, teaches particulate carrier material for use with particulate passivated magnesium for injection into molten iron to desulfurize the iron, improve characteristics of the slag and increase iron yield.

Trout, col. 5, teaches particle size of the carrier material (about 200 mesh) and the passivated magnesium (about 12-20 mesh) is an important characteristic of the material.

200 mesh is about .075 mm (75 microns).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the particle size of the carrier material as taught by Trout as the particulate size of composition as taught by Kinsman because Trout teaches particle size is an important characteristic of the material will:

a) produce a more homogenous mixture of material being injected,

b) improve desulfurization agent flowability,

c) reduce desulfurization agent surging during injections,

d) reduce molten iron splashing related to surging,

e) reduce environmental issues from molten iron splashing, and

f) reduce the iron yield reduction related to splashing of molten iron.

It would have been obvious to one of ordinary skill in the art at the time of the invention to ensure 90% of the carrier material is about 200 mesh to obtain a uniform particle size for the hydrocarbon-plastic/inorganic mixture.

Regarding claim 32, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the particle size of the carrier material as taught by Trout because Trout teaches particle size is an important characteristic of the material will:

a) produce a more homogenous mixture of material being injected,

b) improve desulfurization agent flowability,

c) reduce desulfurization agent surging during injections,

d) reduce molten iron splashing related to surging,

e) reduce environmental issues from molten iron splashing, and

f) reduce the iron yield reduction related to splashing of molten iron.

It would have been obvious to one of ordinary skill in the art at the time of the invention to decrease the particle size of the inorganic solid to ensure the solid is completely mixed with the hydrocarbon- plastic.

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to ensure 90% of the solids have a particle size of .01 microns to ensure a uniform mixture of the solids and hydrocarbon plastic.

Regarding claim 33, Trout, abstract, teaches particulate carrier material for use with particulate passivated magnesium for injection into molten iron to desulfurize the iron, improve characteristics of the slag and increase iron yield.

Trout, col. 5, teaches particle size of the carrier material (about 200 mesh) and the passivated magnesium (about 12-20 mesh) is an important characteristic of the material.

200 mesh is about .075 mm (75 microns).

It would have been obvious to one of ordinary skill in the art at the time of the invention to ensure 90% of the carrier material is about 200 mesh to obtain a uniform particle size for the hydrocarbon-plastic/inorganic mixture.

Regarding claims 34 and 36, Kinsman, col. 3, teaches a desulfurization composition containing from about 3% to about 20% particulate metallic aluminum,

about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities.

Regarding 35, Kinsman, col. 4, teaches when injecting separately or in combination from separate vessels, the ratios of the components may be varied in order to vary the composition of the material exiting the lance tip throughout the course of the injection or to introduce the components in sequence.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of particulates present in the desulfurization composition to obtain specific characteristics of the end product.

Regarding claim 40, Kinsman teaches a composition comprising particulate hydrocarbon material and particulate alumina. These are both considered being in solid form.

Regarding claim 44, Kinsman teaches the desulfurizing composition can be injected into the hot metal through a lance using a carrier gas.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable by Kinsman et al (5972072) in view of Trout et al (6372013) as applied to claim 36 and further in view of Zasowski et al (20010010181).

Although Kinsman and Trout teach a desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities, Kinsman and Trout do not teach the composition comprising titanium dioxide.

Zasowski, paragraph 22 of the PGPUB, teaches a powdered denitrogenizing flux material 26, which includes calcium oxide (CaO) and at least one compound selected from the group consisting of oxides, silicates, carbonates of alkali and alkaline earth metals and oxides, fluorides, silicates and carbonates of metals selected from the group consisting of Calcium (Ca), Silicon (Si), Magnesium (Mg), Boron (B), Titanium (Ti), Barium (Ba) and Aluminum (Al). The most preferred flux materials are CaO--BaO--TiO2--(Al203), CaO--TiO2(Al203) and Calcium-Boron oxide bearing fluxes.

Alternatively, any other flux that is capable of achieving the desired denitrogenization could be substituted.

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute in a preferred flux CaO--TiO2(Al203) as taught by Zasowski for the alumina as taught by Kinsman and Trout because both are fluxes that are capable of achieving the desired denitrogenization

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to use synthetic materials instead of natural materials to save money on producing the product as a whole and to ensure purity of the materials.

Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman et al (5972072) in view of Trout et al (6372013) as applied to claim 31 and further in view of Doliwa (4398946).

Although Kinsman and Trout teach desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities, Kinsman and Trout do not teach the hydrocarbon material comprising plastic comprising nitrogen.

Doliwa, cols. 2 and 3, teaches the a method of producing homogeneous cast-iron melts from a heterogeneous charge containing a proportion of steel scrap of up to very high amount as well as other ordinary charge components, characterized by the fact that by the addition of compacts of silicon carbide or other alloying substances and/or ordinary charge components containing slag-forming admixtures from the ternary system 8-18% CAO-10-40% SiO.sub.2 --2-16% Al203 which contain additions of hydrocarbon and/or hydrocarbon-nitrogen compounds, a reductive furnace atmosphere and a limiting of suboxide-containing primary slags, a practically loss-free carburization and silicification as well as a favorable condition of nucleation of the homogenized melt is brought about, as well as compacts for carrying out the said method, are disclosed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute in a hydrocarbon-nitrogen compounds as taught by Doliwa for the hydrocarbon material as taught by Kinsman and Trout because Doliwa teaches, cols. 2 and 3, both hydrocarbon and hydrocarbon-nitrogen compounds within a very short time produce a reductive atmosphere and a limiting of the suboxide-containing primary slags and thus a practically loss-free introduction of the slag components.

Claims 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman et al (5972072) in view of Trout et al (6372013) as applied to claim 31.

Although Kinsman and Trout teach desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities, Kinsman does not teach the hydrocarbon material is a used hydrocarbon material.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use old plastic for the hydrocarbon material to save money on producing the product as a whole.

Claims 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman et al (5972072) in view of Trout et al (6372013) as applied to claim 31.

Further, Kinsman, col. 4, teaches the reagent may be added in whole as a blend or may be added separately or in combination from individual storage and injection

vessels so as to approximately match the preferred blend composition above as closely as possible.

It would have been obvious to one of ordinary skill in the art at the time of the invention to blend the hydrocarbon material in their molten state with the particulate components to ensure a homogenous blend enters the melt.

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to obtain a blend with the blend having particulate particle sizes to ensure optimal final properties of the melt.

Regarding claim 45, Kinsman teaches the desulfurizing composition can be injected into the hot metal through a lance using a carrier gas or dumped into the hot metal as it is being poured into the ladle.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to dump into the hot melt the composition in any shape or form such as lumps to obtain optimal properties of the final product.

Claims 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman et al (5972072) in view of Trout et al (6372013) as applied to claim 31.

Further, Kinsman, col. 4, teaches the reagent may be added in whole as a blend or may be added separately or in combination from individual storage and injection vessels so as to approximately match the preferred blend composition above as closely as possible.

It would have been obvious to one of ordinary skill in the art at the time of the invention to blend the hydrocarbon material in their molten state with the particulate components to ensure a homogenous blend enters the melt.

Response to Arguments

Applicant's arguments filed 11/1/2010 have been fully considered but they are not persuasive.

Applicant argues the object of the presently claimed is to provide a process for preparing fine inorganic dust-like fluxes, especially synthetic titanium dioxide, which is to be introduced into metallurgical smelting systems. All of the cited references merely mention a blend of flux constituents with hydrocarbons or polymers. The fine inorganic materials according to the presently claimed invention are bound onto the surface of the plastic granules or preferably mixed with molten plastic (see description, bridging paragraph page 4 to 5).

The limitation of "the fine inorganic materials according to the presently claimed invention are bound onto the surface of the plastic granules or preferably mixed with molten plastic" is not claimed in independent claim 31 and therefore is not considered.

Further, regarding claims 46-48, Kinsman, col. 4, teaches the reagent may be added in whole as a blend or may be added separately or in combination from individual storage and injection vessels so as to approximately match the preferred blend composition above as closely as possible.

It would have been obvious to one of ordinary skill in the art at the time of the invention to blend the hydrocarbon material in their molten state with the particulate components to ensure a homogenous blend enters the melt.

Further, applicant argues the presently claimed invention provides a method for introducing slag-forming additives into metallurgical smelts in a dust free and much more easily measureable way into metallurgical smelts.

This limitation is not present in the claims and therefore is not considered.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEFANIE COHEN whose telephone number is

(571)270-5836. The examiner can normally be reached on Monday through Thursday 9:3am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melvin Curtis Mayes can be reached on 5712721234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stefanie Cohen 1/5/2011

SC

January 18, 2011

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1732